

SEQUENCE LISTING

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Joutsjoki, Vesa
Paloheimo, Marja
Suominen, Pirkko

<120> Novel Cellulases, The Genes Encoding Them and Uses Thereof

<130> 1716.051000A

<150> US 08/841,636
<151> 1997-04-30

<150> PCT/FI96/00550
<151> 1996-10-17

<150> US 08/732,181
<151> 1996-10-16

<150> US 60/020,840
<151> 1996-06-28

<150> US 60/007,926
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<170> PatentIn version 3.2

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| | | | | | | | | |
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| 1 | | | | 5 | | | | 10 | | | | | | 15 | |

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| tgatcaccgc cctcattacg cgtgccgacc ggaccgcgtt cagggctcac tgctcaccgc | 180 |
| atccagatac tgggactgct gcaagccgtc gtgcggctgg cgcggaaagg gccccgtgaa | 240 |
| ccagcccgtc tactcgtgcg acgccaactt ccagcgcac cagacttcg atgccgtctc | 300 |
| gggctgcgag ggcggccccg ccttctcgtg cgccgaccac agcccctggg ccattaatga | 360 |
| caacctctcg tacggcttcg cggcgactgc actcagcggc cagaccgagg agtcgtggtg | 420 |
| ctgtgcctgc tacgcgtgag tgtgcttggg cccaacgtcg gtgattccgg agttcagacc | 480 |

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35 40 45

Val Tyr Ser Cys Asp Ala Asn Phe Gln Arg Ile His Asp Phe Asp Ala
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Val Ser Gly Cys Glu Gly Gly Pro Ala Phe Ser Cys Ala Asp His Ser
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Pro Trp Ala Ile Asn Asp Asn Leu Ser Tyr Gly Phe Ala Ala Thr Ala
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Leu Ser Gly Gln Thr Glu Glu Ser Trp Cys Cys Ala Cys Tyr Ala Leu
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Thr Phe Thr Ser Gly Pro Val Ala Gly Lys Thr Met Val Val Gln Ser
115 120 125

Thr Ser Thr Gly Gly Asp Leu Gly Ser Asn His Phe Asp Leu Asn Ile
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Pro Gly Gly Gly Val Gly Leu Phe Asp Gly Cys Thr Pro Gln Phe Gly

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| Asp Ser Phe Pro Glu Pro Leu Lys Pro Gly Cys Gln Trp Arg Phe Asp | | | | | | |
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| Trp Phe Gln Asn Ala Asp Asn Pro Ser Phe Thr Phe Glu Arg Val Gln | | | | | | |
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| Cys Pro Glu Glu Leu Val Ala Arg Thr Gly Cys Arg Arg His Asp Asp | | | | | | |
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Asn Tyr Ile Val Leu Asp Ser Leu Ser His Pro Val His Gln Val Asp
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Asn Asp Tyr Asn Cys Gly Asp Trp Gly Gln Lys Pro Asn Ala Thr Ala
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Cys Pro Asp Val Glu Ser Cys Ala Arg Asn Cys Ile Met Glu Gly Val

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| Leu | Asp | Glu | Thr | Glu | His | Arg | Tyr | Glu | Met | Met | His | Leu | Thr | Gly | Gln | | | | |
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| Glu | Phe | Thr | Phe | Glu | Val | Asp | Ala | Thr | Lys | Leu | Pro | Cys | Gly | Met | Asn | | | | |
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| Leu | Asn | Pro | Gly | Gly | Ala | Tyr | Tyr | Gly | Thr | Gly | Tyr | Cys | Asp | Ala | Gln | | | | |
| | | | 180 | | | | | 185 | | | | | 190 | | | | | | |
| Cys | Phe | Val | Thr | Pro | Phe | Ile | Asn | Gly | Ile | Gly | Asn | Ile | Glu | Gly | Lys | | | | |
| | | 195 | | | | | 200 | | | | | 205 | | | | | | | |
| Gly | Ser | Cys | Cys | Asn | Glu | Met | Asp | Ile | Trp | Glu | Ala | Asn | Ser | Arg | Ala | | | | |
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| Thr | His | Val | Ala | Pro | His | Thr | Cys | Asn | Gln | Thr | Gly | Leu | Tyr | Met | Cys | | | | |
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| Gly | Trp | Asn | Pro | Tyr | Arg | Val | Asn | Ile | Thr | Asp | Tyr | Tyr | Gly | Asn | Ser | | | | |
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| Asp | Ala | Phe | Arg | Val | Asp | Thr | Arg | Arg | Pro | Phe | Thr | Val | Val | Thr | Gln | | | | |
| | | 275 | | | | | 280 | | | | | 285 | | | | | | | |
| Phe | Pro | Ala | Asp | Ala | Glu | Gly | Arg | Leu | Glu | Ser | Ile | His | Arg | Leu | Tyr | | | | |
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| Val | Gln | Asp | Gly | Lys | Val | Ile | Glu | Ser | Tyr | Val | Val | Asp | Ala | Pro | Gly | | | | |
| 305 | | | | | 310 | | | | | 315 | | | | | 320 | | | | |
| Leu | Pro | Arg | Thr | Asp | Ser | Leu | Asn | Asp | Glu | Phe | Cys | Ala | Ala | Thr | Gly | | | | |
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Met Thr Arg Gly Met Val Leu Ala Met Ser Ile Trp Trp Asp Glu Ser
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Asp Glu Gly Asp Pro Lys Asn Ile Val Lys Val Glu Pro Ser Pro Glu
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His Pro Pro Leu Thr Trp Gln Arg Cys Thr Ala Pro Gly Asn Cys Gln
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Thr Val Asn Ala Glu Val Val Ile Asp Ala Asn Trp Arg Trp Leu His
50          55          60

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| | | | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Asp | Asp | Asn | Met | Gln | Asn | Cys | Tyr | Asp | Gly | Asn | Gln | Trp | Thr | Asn | Ala | 65 | 70 | 75 | 80 |
| Cys | Ser | Thr | Ala | Thr | Asp | Cys | Ala | Glu | Lys | Cys | Met | Ile | Glu | Gly | Ala | 85 | 90 | 95 | |
| Gly | Asp | Tyr | Leu | Gly | Thr | Tyr | Gly | Ala | Ser | Thr | Ser | Gly | Asp | Ala | Leu | 100 | 105 | 110 | |
| Thr | Leu | Lys | Phe | Val | Thr | Lys | His | Glu | Tyr | Gly | Thr | Asn | Val | Gly | Ser | 115 | 120 | 125 | |
| Arg | Phe | Tyr | Leu | Met | Asn | Gly | Pro | Asp | Lys | Tyr | Gln | Met | Phe | Asn | Leu | 130 | 135 | 140 | |
| Met | Gly | Asn | Glu | Leu | Ala | Phe | Asp | Val | Asp | Leu | Ser | Thr | Val | Glu | Cys | 145 | 150 | 155 | 160 |
| Gly | Ile | Asn | Ser | Ala | Leu | Tyr | Phe | Val | Ala | Met | Glu | Glu | Asp | Gly | Gly | 165 | 170 | 175 | |
| Met | Ala | Ser | Tyr | Pro | Ser | Asn | Gln | Ala | Gly | Ala | Arg | Tyr | Gly | Thr | Gly | 180 | 185 | 190 | |
| Tyr | Cys | Asp | Ala | Gln | Cys | Ala | Arg | Asp | Leu | Lys | Phe | Val | Gly | Gly | Lys | 195 | 200 | 205 | |
| Ala | Asn | Ile | Glu | Gly | Trp | Lys | Ser | Ser | Thr | Ser | Asp | Pro | Asn | Ala | Gly | 210 | 215 | 220 | |
| Val | Gly | Pro | Tyr | Gly | Ser | Cys | Cys | Ala | Glu | Ile | Asp | Val | Trp | Glu | Ser | 225 | 230 | 235 | 240 |
| Asn | Ala | Tyr | Ala | Phe | Ala | Phe | Thr | Pro | His | Ala | Cys | Thr | Thr | Asn | Glu | 245 | 250 | 255 | |
| Tyr | His | Val | Cys | Glu | Thr | Thr | Asn | Cys | Gly | Gly | Thr | Tyr | Ser | Glu | Asp | 260 | 265 | 270 | |
| Arg | Phe | Ala | Gly | Lys | Cys | Asp | Ala | Asn | Gly | Cys | Asp | Tyr | Asn | Pro | Tyr | 275 | 280 | 285 | |
| Arg | Met | Gly | Asn | Pro | Asp | Phe | Tyr | Gly | Lys | Gly | Lys | Thr | Leu | Asp | Thr | 290 | 295 | 300 | |

Ser Arg Lys Phe Thr Val Val Ser Arg Phe Glu Glu Asn Lys Leu Ser
305 310 315 320

Gln Tyr Phe Ile Gln Asp Gly Arg Lys Ile Glu Ile Pro Pro Pro Thr
325 330 335

Trp Glu Gly Met Pro Asn Ser Ser Glu Ile Thr Pro Glu Leu Cys Ser
340 345 350

Thr Met Phe Asp Val Phe Asn Asp Arg Asn Arg Phe Glu Glu Val Gly
355 360 365

Gly Phe Glu Gln Leu Asn Asn Ala Leu Arg Val Pro Met Val Leu Val
370 375 380

Met Ser Ile Trp Asp Asp His Tyr Ala Asn Met Leu Trp Leu Asp Ser
385 390 395 400

Ile Tyr Pro Pro Glu Lys Glu Gly Gln Pro Gly Ala Ala Arg Gly Asp
405 410 415

Cys Pro Thr Asp Ser Gly Val Pro Ala Glu Val Glu Ala Gln Phe Pro
420 425 430

Asp Ala Gln Val Val Trp Ser Asn Ile Arg Phe Gly Pro Ile Gly Ser
435 440 445

Thr Tyr Asp Phe
450

<210> 36

<211> 887

<212> DNA

<213> Melanocarpus albomyces

<400> 36

| | |
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| gcaaccagtg caccaggag atgaaggctc acgagaacat tgacggctgg ctgcagagcc | 120 |
| tgcccgga cgtcccatc accggtccgc agcccggtc tggtaatca aagagatgat | 180 |
| gcctacctac cttccacct tcccaccag ccgcaaatac ctttctccct cccgtgccc | 240 |
| cgtattcttt caacgcccc agactgacag acccgctcgt cccaggcggc aacccggca | 300 |
| acggcggcgg cagcaaccg ggcaacggcg gcggcggcgg ctgcaccgtc cagaagtggg | 360 |
| gccagtgcgg cggcatcggc tactcggggt gcaccacctg caaggccggc tcgacctgcc | 420 |

cggcccagaa cgagtactac tcgcagtgcc tgtaaagcgg ccgtgggcta ggtggccgag 480
cggggggggtt tcttcattgg ttgagcaaat agaacaggat ttccggctcg ttggcagcgg 540
cgcgccgcgg ggatggtgtt gtacaattca agacctcagt accgagggac ctggaaagga 600
gtcagtctgc ttgtacggag gctggctgcc ccgtggcggc gctggcaagg tagatagccc 660
ttcattgctg taactagtat gctatatacc tctgcacatt tgcagcccca tgggtgtgaac 720
aacaagtgac aaggcttcca gttccagcct cgcgcaattg tcacgatatc cttgggtccat 780
ctatatgtat gggcatgagc gagtcgagaa aatgtaccgc gaaaaatcgt agtgacctgc 840
gcactgcgcc gttctaccac cgtaggattg aagtgaatct cgaattc 887

<210> 37
<211> 34
<212> PRT
<213> Melanocarpus albomyces

<400> 37

Gln Lys Trp Gly Gln Cys Gly Gly Ile Gly Tyr Ser Gly Cys Thr Thr
1 5 10 15

Cys Lys Ala Gly Ser Thr Cys Pro Ala Gln Asn Glu Tyr Tyr Ser Gln
20 25 30

Cys Leu

<210> 38
<211> 29
<212> DNA
<213> Unknown

<220>
<223> PCR Primer

<400> 38
atagaattct aytgggaytg ytgyaarcc 29

<210> 39
<211> 26
<212> DNA
<213> Unknown

<220>
<223> PCR Primer

<220>
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<222> (15)..(15)
<223> n is a, c, g, or t

<400> 39
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26

<210> 40
<211> 17
<212> DNA
<213> Unknown

<220>
<223> PCR Primer

<220>
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<400> 40
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17

<210> 41
<211> 17
<212> DNA
<213> Unknown

<220>
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<220>
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17

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17

<210> 43
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<213> Unknown

<220>
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<220>
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<400> 43
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17

<210> 44
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<212> DNA
<213> Trichoderma reesei

<400> 44
ccgcggactg gcatac

15

<210> 45
<211> 16
<212> DNA
<213> Trichoderma reesei

<400> 45
ccgcggactg cgcatac

16